AMENDMENTS TO THE CLAIMS

IN THE CLAIMS:

A complete set of claims is provided below.

Please amend Claim 20 as indicated.

1. (Original) A communication system that provides dynamic arbitrary mapping of multiple transmit buffers to multiple channels in an efficient, low-cost, manner that provides low latency and a high probability of successful transmission even when some of the channels are corrupted by time-changing noise that temporarily and unpredictably renders some channels unusable, comprising:

a plurality of transmit buffers, each buffer corresponding to its own unique bit in an active-fragment register, each of said transmit buffers being an active buffer when said unique bit in said active-fragment register is asserted;

a plurality of channel transmitters, each channel transmitter corresponding to its own unique bit in an active-channel register, each of said channel transmitters corresponding to an active channel when said unique bit in said active-channel register is asserted; and

channel-mapping logic configured to map said transmit buffers to said channel transmitters according to data in said active-fragment register and said active-channel register, said channel mapping logic configured to map as many active fragments as possible into active channels, said channel mapping logic further configured to map active buffers to more than one channel once all active buffers have been mapped to at least one channel.

2. (Original) The communication system of Claim 1, wherein the number of said transmit buffers is the same as the number of said channel transmitters.

3. (Original) The communication system of Claim 1, wherein one or more of said active channels is carried by a power line networking system.

4. (Original) The communication system of Claim 1, wherein one or more of said channels is carried by a radio-frequency transmission system.

5. (Original) The communication system of Claim 1, wherein said channel-mapping logic comprises a plurality of *M*-input one-output multiplexers, where *M* is the number of transmit buffers and an output of each transmit buffer is provided to one and only one input of each of said multiplexers and the output of each multiplexer is provided to an input of one and only one channel transmitter.

6. (Original) The communication system of Claim 1, further comprising a good-channel register, wherein data from said good channel register is used to update said active-channel register and said active-fragment register.

7. (Original) The communication system of Claim 6, wherein said good-channel register is configured to be loaded with a bitmask from an acknowledge packet, said acknowledge packet sent from a receiving node to a transmitting node in response to transmission of data from said transmitting node to said receiving node, said bitmask indicating on which of said channels said receiver successfully received data and on which of said channels said receiver did not successfully receive data in response to a previous transmission from said transmitting node.

8. (Original) The communication system of Claim 1, wherein at least one of said channels is carried by a communication medium.

9. (Original) The communication system of Claim 8, wherein said communication medium comprises a coaxial cable.

10. (Original) The communication system of Claim 8, wherein said communication medium comprises a twisted-pair cable.

11. (Original) The communication system of Claim 8, wherein said communication medium comprises a fiber-optic cable.

12. (Original) The communication system of Claim 1, wherein data is modulated onto said active channel using differential Binary Phase Shift Keying.

13. (Original) The communication system of Claim 1, wherein data is modulated onto said active channel using differential Quadrature Phase Shift Keying.

14. (Original) The communication system of Claim 1, wherein data is modulated onto said active channel using Quadrature Amplitude Modulation.

15. (Original) The communication system of Claim 1, wherein data is modulated onto said active channel using Frequency Shift Keying.

16. (Original) The communication system of Claim 1, wherein said active channel is frequency-division multiplexed with respect to a second active channel.

17. (Original) The communication system of Claim 1, wherein said active channel is orthogonal frequency-division multiplexed with respect to a second active channel.

18. (Original) An apparatus, comprising:

means for storing active fragments;

means for storing active fragment flags;

a plurality of channel transmitters;

means for storing active channel flags; and

means for mapping said active fragments to said plurality of channel transmitters.

19. (Original) An apparatus, comprising:

means for storing active fragments;

means for storing active fragment flags;

a plurality of channel transmitters;

means for storing active channel flags; and

means for mapping said active fragments to said plurality of channel transmitters according to said active fragment flags and said active channel flags.

20. (Currently Amended) An apparatus, comprising:

means for storing active fragments;

means for storing active fragment flags;

a plurality of active channel transmitters;

means for storing active channel flags; and

means for mapping said active fragments to said plurality of channel transmitters according to said active fragment flags and said active channel flags such that as many active fragments as possible are mapped to said active channel transmitters and to map one or more of said active fragments to more than one of said active channel transmitters once all of said active fragments have been mapped to at least one active channel transmitter ~~channel~~.

21. (Original) A method for sending fragments over multiple channels, comprising:

loading a plurality of fragments into active transmit buffers;

initializing an active fragment register by asserting bits corresponding to transmit buffers that have been loaded with fragments;

initializing an active channel register;

mapping said active transmit buffers to active channel transmitters;

transmitting to a destination node fragments stored in said active transmit buffers;

receiving an acknowledgement from said destination node, said acknowledgement indicating which fragments were successfully received by said destination node;

updating said active-channel register and said active-fragment register;

re-mapping said active transmit buffers to active channel transmitters; and

re-transmitting to said destination node fragments that were not successfully received by said destination node during any transmission.

22. (Original) The method of Claim 21, further comprising:

repeating the acts of receiving an acknowledgement, updating, re-mapping, and re-transmitting until all active buffers are inactive.

23. (Original) The method of Claim 21, wherein said act of initializing said active channel register comprises asserting all bits of said active channel register that correspond to channels, thereby making all channels active.

24. (Original) The method of Claim 21, wherein said act of initializing said active channel register comprises asserting all bits of said active channel register that correspond to channels which were good channels during a previous transmission.

25. (Original) A method for sending fragments over multiple channels, comprising:

receiving an acknowledgement from a destination node, said acknowledgement indicating which fragments were successfully received by said destination node during a previous transmission;

updating an active-channel register and an active-fragment register;

mapping active transmit buffers to active channel transmitters; and

transmitting active fragments to said destination node.

26. (Original) The method of Claim 25, wherein said act of mapping comprises mapping as many active fragments as possible to active channels and mapping one or more of said active fragments to more than one of said active channels once all of said active fragments have been mapped to at least one active channel.